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Vice-Chair

Mr. John Barlow

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● (0845)

[*English*]

The Vice-Chair (Mr. Richard Cannings (South Okanagan—West Kootenay, NDP)): My name is Richard Cannings. I'm the vice-chair of this committee. Since Mr. Maloney is unable to attend, I'll be starting the meeting. Hopefully, Mr. Barlow will appear soon and he can take over after that. If not, I will later pass it over to Mr. Harvey so that we can continue. We want to get going on this. We have votes coming up later and we have four witnesses, so I think we should start promptly.

Perhaps, we can start with you, Mr. Binder, and we'll work across the table.

Please proceed.

Dr. Michael Binder (President and Chief Executive Officer, Canadian Nuclear Safety Commission): Thank you and good morning, Mr. Chairman and honourable members of the committee.

[*Translation*]

My name is Michael Binder and I am the president of the Canadian Nuclear Safety Commission.

I'm joined by Ramzi Jammal, CNSC executive vice-president and chief regulatory operations officer.

It is a pleasure to be here today to discuss the future of nuclear in Canada from the regulator's perspective.

[*English*]

The CNSC is Canada's nuclear regulator. Under the Nuclear Safety and Control Act, the CNSC carries out its threefold mandate: regulating the use of nuclear energy and materials to promote health, safety, security, and the environment; implementing Canada's international commitment on the peaceful use of nuclear energy; and disseminating objective scientific, technical, and regulatory information to the public.

The CNSC is an independent, quasi-judicial administrative tribunal. We regulate all things nuclear in Canada including uranium mining, nuclear fuel fabrication, nuclear reactors and power plants, the production and use of medical isotopes, the decommissioning and remediation of nuclear sites, and the safe management of nuclear waste.

I would also like to note that this year we are celebrating 70 years of nuclear regulation in Canada. Since 1946, the CNSC and its predecessor, the Atomic Energy Control Board, have safely regulated Canada's nuclear sector by continually strengthening Canada's laws, regulations, and licensing requirements, and by enforcing compliance by licensees.

Looking to the future, we see five key areas of focus that we, as the regulator, need to be ready for.

I'll start with refurbishment. As part of the 2013 long-term energy plan, the Ontario government committed to maintaining nuclear energy as the backbone of Ontario's electricity supply through the refurbishment of the Darlington and Bruce sites. The CNSC will be there every step of the way until the reactors are returned safely to service.

The second significant area is decommissioning. At the CNSC, we are ensuring that we are ready. The Gentilly-2 nuclear facility in Quebec has begun decommissioning. Also, Canadian Nuclear Laboratories has applied to accelerate the decommissioning of Whiteshell Laboratories and the nuclear power demonstration reactor.

Nuclear waste management is the third area where increased regulatory effort will be needed in the future. Internationally, consensus has been reached that deep geological repositories, DGRs, are the safest mechanism for the long-term storage of nuclear waste. Looking forward, we see two DGRs that may potentially be built in Canada: OPG's proposed DGR for low- and intermediate-level radioactive waste, and the NWMO, or Nuclear Waste Management Organization, DGR for used nuclear fuel.

[*Translation*]

The CNSC also regulates waste from uranium mines and mills. Our aim with legacy sites such as Gunnar, Lorado, Cluff Lake and Beaverlodge is to have them restored and released from regulatory management.

[*English*]

Finally, on waste, last week the CNSC held a public meeting in Port Hope, Ontario, at which a progress update was provided on an initiative to clean up historically low-level radioactive waste. After more than a decade of analysis and planning, on November 1, 2016, the environmental cleanup began with the first truckloads being transported to a newly built facility.

Next, at the CNSC, we are making sure we are prepared to regulate new technologies in a manner that is thorough while at the same time efficient and flexible enough not to be a roadblock to innovation. In particular, we have been preparing for small modular reactors, or SMRs. At the moment, five SMR vendors have engaged the CNSC in vendor design reviews to verify, at a high level, if the design meets regulatory requirements and to identify any fundamental barriers.

The last area that I believe will continue to take on an increasingly important role is the dissemination of information and public engagement on major projects. Today both the Canadian public and indigenous peoples have high expectations of the regulator and licensees to provide information early and continuously, to provide ongoing opportunities for engagement, and to be transparent in our decision-making processes.

This leads me to the next section of my talk today, how the CNSC is going to be ready for the future.

The CNSC has approximately 800 highly qualified staff, the majority of whom have degrees in nuclear engineering, chemistry, physics, and environmental and radiation science fields, to name a few. They operate within a strong safety culture, and their scientific and technical expertise enables the commission to make informed science-based decisions.

The CNSC also has a thorough environmental assessment process in place. As a responsible authority under the Canadian Environmental Assessment Act, 2012, we conduct the EAs, environmental assessments, for all nuclear projects. Our EAs are robust and translate directly into licensing requirements. Since 2000, the CNSC has completed 69 EAs.

At the commission, we work hard to foster public trust through ongoing communication with Canadians. Our website is populated with research, publications, and information related to the health and safety of Canadians. We also regularly participate in community events and leverage social media platforms to get our message out.

● (0850)

[*Translation*]

Furthermore, the CNSC is a leader in engaging with indigenous peoples. The CNSC is an agent of the Crown and has a responsibility to meet the duty to consult, and where appropriate, accommodate.

[*English*]

The CNSC is recognized as one of the most open, transparent, and respected nuclear regulators in the world. We are one of only a few nuclear regulators that conduct public licensing hearings and webcast the proceedings. Each year we produce reports on the safety performance of our licensees, which are made available for comment and are also discussed in public proceedings. To ensure members of the public and indigenous groups are able to participate, we offer participant funding to interested intervenors.

At the CNSC, we are committed to continuous improvement. A recent audit by the commissioner of the environment and sustainable development provided recommendations for improving the documentation of the nuclear power plant site inspection program. The CNSC accepted the findings of the audit and took immediate corrective action.

At the same time, the CNSC is making great progress in the modernization of its regulatory framework to make sure our regulations are clear, take into consideration the most current safety knowledge, and are flexible enough to address current and future requirements.

Let's be clear. We are the only regulator in Canada that subjects itself to international peer reviews of its operations. The CNSC has recently undergone three International Atomic Energy Agency reviews. The outcomes showcase Canada as a leader in nuclear regulation, with a strong emphasis on operational safety and security.

Our leadership role extends to the world stage as well. I'm really proud to tell you that our vice-president, Mr. Jammal, right here with me, was elected to be this year's president of the Convention on Nuclear Safety, an international group of member countries devoted to promoting nuclear safety standards.

● (0855)

The CNSC also regularly leads peer review missions across the globe. Recently Mr. Jammal led missions to Russia, China, and India. These three countries are seeing the largest growth in the use of nuclear energy.

[*Translation*]

There is no other industry that is so tightly scrutinized and regulated, with so many checks and balances for ensuring the protection of health, safety and security of people and the environment.

[*English*]

There are obviously new challenges and opportunities ahead. I believe the CNSC is well positioned to address them. I would be pleased to answer any questions that you might have.

Thank you.

The Vice-Chair (Mr. John Barlow (Foothills, CPC)): Thank you very much, Mr. Binder.

We'll now move on to Mr. Barrett.

Dr. John Barrett (President and Chief Executive Officer, Canadian Nuclear Association): Thank you very much, Mr. Chairman and members of the committee. Good morning.

The Canadian Nuclear Association is a national industry association founded in 1960 to raise awareness of the many benefits that civil nuclear technology brings to Canadians.

We would like to offer some insights into how nuclear technology can help Canada achieve ambitious climate change objectives, within the context of sustainable development; how we can use its innovative potential to improve the quality of life for Canadians; and how Canada's own brand of nuclear technology brings economic opportunities for communities and high-skilled jobs for those seeking a demanding but rewarding future in the nuclear sector.

First, nuclear energy generates about 15% of Canada's electricity and 20% of its low-carbon electricity. This is not well known. It shows that nuclear's capacity to deliver baseload, scalable low-carbon energy is a fact. It is not intermittent. It is not backed up by fossil fuels.

In Ontario nuclear energy provides, on any given day, approximately 60% of the province's electricity. Again, that is not well known. Without this contribution, Ontario wouldn't have had the generating capacity to substitute clean energy for coal and there would still be smog days in the GTA and southern Ontario. The Green Energy Act did not do it. Four reactors at Bruce and two at Pickering were brought back online and coal was finished.

Ontario has now embarked upon the biggest single investment in North America, possibly most of the world except for China, in large-scale clean energy. Twenty-five billion dollars in refurbishment of the 10 reactors will guarantee a significant supply of clean electricity to 2040 and beyond. This is a huge contribution to the government's aim to create a low-carbon economy.

The second point I would make is on sustainable development. Nuclear technology meets nine of the United Nations 17 sustainable development goals. Again, this is not too well known. In the interests of time I won't go through the nine, but I would like to highlight a couple of them. Goal number two is zero hunger. Nuclear science, through isotopic work, helps to protect plants and grow crops that are more resilient to disease and climate change.

Goal number three is good health and well-being. Nuclear medicine provides precise diagnoses and treatment of various cancers, cardiovascular diseases, Alzheimer's, and various infections. Medical cobalt is used worldwide for cancer treatment and radiation therapy, particularly for complex brain tumours. No other energy technologies bring so much benefit to people's health.

Goal number six is clean water and sanitation. Goal number seven is affordable and clean energy, and here, just to elaborate slightly, clean, reliable, and affordable energy is critical to the health and economic well-being of communities around the world and nuclear power provides that. At the same time, its consumption of fuel resources is very low. Its environmental footprint is extremely limited, certainly by comparison with other energy sources, both fossil fuel and renewable.

Like all energy systems, nuclear energy generation produces waste products, including fuel that still has energy that could be used. No other energy system takes care of its waste as nuclear does. It is controlled, managed, accounted for, paid for, regulated, documented, and limited in Canada to seven sites in total. What other energy system can claim this?

Goal number nine is in industry, innovation, and infrastructure. Here we've had mention already by Mr. Binder of small modular reactors. These represent an innovative approach to delivering clean electricity to underserved markets around the world. Meanwhile, nuclear innovation is providing a more sustainable way to travel through the development of lighter-weight vehicles, thanks to advanced materials made possible through neutron-beam analysis and testing. Lighter and safer cars means more fuel efficiency, fewer GHGs, and less strain on our natural resources.

On goal number 13, climate action, nuclear power is one of the lowest carbon sources of electricity on the planet. This is a fact recognized by all serious life-cycle analyses of energy systems. What's more, nuclear power is scalable and can produce rapid and real decarbonization in an economy.

● (0900)

France and Sweden, during the 1970s and 1980s, built their nuclear power systems rapidly, and as a result—it's documented—the decarbonization that occurred was an effect. While people talk about a decarbonized future, you can actually turn to real data and show how it's done rapidly and on a scalable dimension.

Goal number 14 is life below water, and goal number 15, life on land. Goal number 17 is partnerships for sustainable development. I'll just mention those as the tag lines.

A third point I want to mention is nuclear energy's economic impact. Construction, operations, and refurbishments provide good jobs and economic benefits. The supply chains are Canadian. The knowledge requirements are high. Studies by the Canadian Manufacturers & Exporters, and by KPMG and others, have demonstrated the important positive economic impact of nuclear power generation in local Ontario communities and beyond via the extensive supply chain; 60,000 direct and indirect jobs are a result of the nuclear sector. This, along with building, refurbishing, operating, and servicing brings made-in-Canada economic success to Canada, unlike other sources of energy technology, where the manufacture and the result in incomes and job benefits take place offshore.

Fourth, the nuclear sector is a strategic asset for our country. By that, I mean that no other Canadian source of clean energy has the same international impact as nuclear. Our technology expertise gives us the credibility and standing to play a strong and active role in international security issues. As I can personally testify, examples can range from Iran's nuclear program, the UN expert meetings on arms control and disarmament verification, and to negotiations on a cut-off of fissile material. Our bilateral relations with countries utilizing Canadian nuclear technology—China, India, South Korea, Pakistan, Argentina, Romania—have a qualitatively different character because of our long-term nuclear co-operation.

In addition, another little-known fact is Canada's nuclear technology and uranium exports have, over the last 30 years, contributed globally to the avoidance of at least one billion tonnes of CO2 in displacing fossil fuel sources. No other Canadian energy source can make this claim.

Fifth, there is an exciting vista ahead of us and within our grasp if we are bold and innovative. It is the possibility of bringing electricity and energy to remote indigenous communities in the north or in remote places far off the electricity grid. These communities need non-fossil energy resources sufficient to power electricity needs, as well as water purification and public health needs.

A very small nuclear reactor, inherently safe and simple to operate, would be a real option. That possibility is coming closer as SMR technology develops around the world and right here in Canada. Importantly, there is a key enabling role for the federal government in this endeavour to bring virtually limitless clean energy to remote communities.

In a recent paper on what we call “northern lights”, we set out the very stages of host community support, industry partnership, technology demonstration, and licensing that would ready SMRs for deployment within a decade. SMR development also has applications in the resource extraction sector. Mining operations, both current and potential, occurring in remote areas, would benefit enormously from SMR-generated clean electricity and heating.

Oil sands extraction requires enormous energy. Today that energy is provided by fossil fuels. Were steam to be produced by clean electricity from an on-site SMR, the situation would be dramatically changed. Canada's upstream GHG emissions would be radically reduced.

In all of these areas I've described, the single feature that unites them is innovation. To this end the industry is putting finishing touches on what we call a nuclear innovation, technology innovation, road map. This road map sets out the aspirations of the industry, and the policy and investment steps needed to continue and expand Canada's innovative nuclear energy future.

How can we best manage this ambition and opportunity? We are proposing the creation of a nuclear innovation council, with participation of industry and federal and interested provincial governments. Such a council would bring together key stakeholders to align the nuclear industry's technology road map, which I mentioned. We would align that to the Canadian energy strategy and to a pan-Canadian framework for clean growth and climate change, as outlined in the Vancouver declaration.

● (0905)

Moreover, it would give strategic direction to the nuclear sector's role in the government's “mission innovation” and the new low-carbon economy trust. We strongly believe that Canada's nuclear sector should be recognized and supported as strategic infrastructure and as a key contributor to the government's inclusive innovation. The aims and objectives of many of the government's important policy and investment objectives are, in our view, squarely met by the nuclear sector.

Mr. Chairman and members of the committee, we are bringing these ideas—the road map, the northern lights SMR project, the proposal for a nuclear industry council—to various stakeholders. We will be pursuing them at federal and provincial levels in the coming weeks and months. We hope very much that this committee would lend support to them and to the future of the nuclear sector, with all that it promises for our economy, our energy security, our environmental status, and our international engagement and leadership.

Thank you for the opportunity to speak to you today.

The Vice-Chair (Mr. John Barlow): Thank you very much, Mr. Barrett.

Now we'll go to Ms. Quinn and Mr. Sexton, for 10 minutes, please.

Mr. Richard Sexton (Acting Chief Transition Officer, Atomic Energy of Canada Limited): Thank you, Mr. Chairman and members of the committee.

Today I'd like to give you a very brief overview of AECL and its role in nuclear technology, as well as a bit about its history, where it is currently, and how it contributes to the nuclear sector, nuclear energy, and nuclear applications across all of Canada.

Chalk River or AECL has been leading innovation for over 60 years. It's the largest scientific complex in Canada. It has 3,000 workers, many of whom are scientists doing research on a variety of elements and activities. It's the birthplace of Canada's nuclear industry. The first sustained criticality outside of the U.S. occurred there. Probably even more important, it's the birthplace of the CANDU reactor technology, with 19 reactors in Canada and 30 operating internationally. It also provided the research and facilities for breakthroughs in the application of medical isotopes, including cobalt-60.

AECL really is the heart of the nuclear sector. AECL has been doing nuclear research in energy, health, safety, security, and non-proliferation. Currently, the nuclear industry generates $6 billion of domestic product. As John indicated, there are 60,000 workers engaged in this industry. Canada has a large and robust supply chain that supplies both domestically and internationally. At its peak, the NRU reactor produced the material for over 20 million diagnostic procedures per year.

It's also the home of two Nobel Prize winners.

Regarding AECL today, as many of you may be aware, AECL has gone through a significant restructuring. Our mandate remains essentially the same: to enable nuclear science and technology to support both the federal government and industry. Our mandate is also to manage Canadians' radioactive waste and decommissioning liabilities.

AECL's mandate is now delivered through a long-term contract with the private sector under what is known as a government-owned contractor-operated, or GOCO, model. All the facilities, all the assets, and all the individuals—including the laboratory—are managed and operated by Canadian Nuclear Laboratories. This model has been used both in the U.K. and in the U.S. and has been found to be quite successful. The GOCO model leverages international best practices. It brings rigour and efficiency, and it will advance the priorities of the nuclear laboratory.

Currently, AECL has an annual spend of just under a billion dollars. We are also in the process of delivering infrastructure improvements at the site, with a budget of $800 million, in the next five years.

In terms of AECL's focus, the Chalk River labs are focused on three areas. First and foremost is science and technology, specifically in the area of nuclear energy and material science, which is applied to a wide variety of industries, including oil and gas. There is also research in health, emergency preparedness, safety, and the environment, which is also applied widely across other industries.

As I mentioned, one of the focuses is decommissioning and waste management. I'll talk a bit more about that in a minute or so. I have already mentioned that the lab is currently undergoing a significant renewal with the application of $800 million in the next five years, revitalizing the lab.

● (0910)

The lab has a very wide set of science and technology applications. Most of them are related to the nuclear industry but are by no means specific to that industry. It does work in thermodynamics, in surface science, biological research. It does have the NRU reactor and works on advanced fuels and has a hot cell. As I mentioned, the lab is going through a significant renewal. There's a new hydrogen isotope facility, a recently opened multi-purpose science facility, and other facilities are being planned.

Regarding nuclear energy in Canada, as John and others have mentioned, Canada has a long history of safe and successful use of nuclear energy. It's one of only a handful of countries with homegrown nuclear technology, export experience, a strong regulator, a supply chain, and most importantly, a world-class nuclear workforce.

Nuclear energy is a low greenhouse gas emitting technology. It has a strong environmental record, a strong safety record. It has an independent regulator that's respected worldwide and as mentioned, it does generate some amount of waste but that waste is low in volume, it's well managed, it's rigorously accounted for, and it's funded. Nuclear energy provides a reliable, baseload electricity that complements other clean and renewable energy sources. This has been recognized internationally.

As John mentioned, significant investment is occurring in the nuclear industry with the $25 billion invested in the refurbishment. We believe this provides an opportunity to show the cost-effectiveness of nuclear projects being delivered on time and on budget.

On nuclear technology innovation, nuclear technology at Chalk River has been a springboard to innovation in multiple areas of the economy. The study of materials has direct applications to industry that need high-performing materials. The work at Chalk River also continues to support the nuclear industry in terms of continued safety, lower operating costs, life extension, and exports of the nuclear supply chain.

In summary, the Chalk River laboratory is a key element of not only the nuclear sector but the innovation and science and technology capacity across Canada. One of the emerging innovations is that around a very small modular reactor. Canada's expertise and experience provide Canada a unique opportunity. The application of this type of technology could serve a wide variety of potential customers, including the mining and gas industry. It could bring energy to the northern, more remote communities, and it provides an opportunity for export.

One of the challenges facing small modular reactors is the number of designs. We believe that the Chalk River lab could help advise both the government and commercial companies on the technology. Currently, there are over 100 different designs. We believe that Chalk River provides a site and the technology and the capability to find the best and the most appropriate.

Finally, on the topic of decommissioning and waste management, as I mentioned, AECL is responsible for the liability that Canada has, which is currently estimated at $8 billion. These liabilities are a result of 60 years of research, development, and production of radiopharmaceuticals. The point I want to make is that nuclear waste in Canada is understood, it's very well managed, it's highly regulated, and currently it's minimized to the extent possible.

As I mentioned, decommissioning is under way in Canada, and we have solutions for almost all the waste. The Nuclear Waste Management Organization is overseeing the long-term solution to used fuel and low-level and some intermediate-level waste at Chalk River. We're in the process of designing and securing regulatory approval for what we call a near-surface disposal facility.

● (0915)

There are currently two low-level waste management facilities being built, in Port Hope and Port Granby. There are decommissioning plans being put together for both Whiteshell and the NPD reactor.

In summary, we believe nuclear is a key contributor to low-carbon energy production. It has a strong environmental record in safety and it is complementary to other sources of energy. Canada has a strategic advantage with nuclear power technology. It has experience with both the environmental and economic application, and it has and could produce significant high-quality jobs. The Chalk River laboratory is a key element, not only to the Canadian nuclear sector but to its innovation chain and science and technology capabilities across the entire country.

Canada is very well placed to seize an opportunity as it relates to the small and very small modular reactors, but this will require investment from both government and industry. Finally, in terms of waste and decommissioning, work is under way. We understand the waste. It's accounted for and well managed and it's funded. AECL is leading the way to develop safe waste management solutions.

Thank you.

The Vice-Chair (Mr. John Barlow): Thank you very much, Mr. Sexton.

Mr. Oberth, I will finish with you for 10 minutes, please.

I understand you had an exciting travel schedule to get here, so we appreciate your getting here as quickly as you could.

Mr. Ron Oberth (President and Chief Executive Officer, Organization of Canadian Nuclear Industries): Thank goodness it wasn't exciting. It was very boring, but that's the way I like to travel.

First of all, my organization, the Organization of Canadian Nuclear Industries, represents the Canadian nuclear supply chain. We just surpassed 200 members a few weeks ago. Most of our members are SMEs. That's an important sector in our industry. They are located largely in Ontario, but we have some members in Quebec and in the west. Our members employ more than 12,000 people dedicated to the nuclear industry that our colleagues have described so well.

I thought I would address some of the nine questions that were sent to me last week without repeating some of the remarks that have been stated earlier today.

First of all, one of the first questions was about what challenges are facing our industry. I think the biggest challenge we face right now is to demonstrate superior project performance. One of the critiques of our industry over the number of years is that we haven't been able to deliver projects in a timely and cost-effective manner. We are now undertaking a major refurbishment project starting at Darlington and then following at Bruce. The Darlington project kicked off its outage on October 14, and it will be back into service on February 20. The oversight of that project by international experts has stated that it's the best planned project they have ever seen, so this is our opportunity to demonstrate we can perform, meet the budget, and meet the schedule in a safe and environmentally sound way.

The other challenge we face, and it has been touched on by others, is that there's generally a profound lack of understanding in the public about our industry. We have to, and will continue to, as well as we can, communicate that understanding, because I think with understanding comes trust. You find in communities around our nuclear sites in Bruce, Darlington, and Pickering, where there's a high level of engagement with local people, that there's a high level of acceptance and understanding of the technology.

On the international front, the big challenge we face is that we're competing with major international marketing organizations and vendor organizations that have strong resources and strong government backing. In order for us to succeed in this difficult international market, we need the support of government and we need export financing credits to help our suppliers.

I think those are the three major challenges we face. The opportunities have been touched by others. I think the huge one is, of course, the recognition everywhere other than in the White House that climate change is real and serious, and that there are plans under way around the world to combat it. As others have said, nuclear has a key role in that battle against carbon, which is a phrase I really like.

You have asked about the state of CANDU technology. It has performed very well in Canada, Argentina, South Korea, Romania, and China. The confidence in that technology was demonstrated by the Ontario government earlier this year when they committed $25 billion to refurbish 10 CANDU units at Bruce and Darlington to continue to provide clean energy to the province of Ontario.

Argentina and Romania are about to commit to further CANDU projects, and as you will hear from the SNC people, the advanced fuel CANDU reactor in China, with the potential to recycle uranium, is a very positive undertaking and it is looking very promising.

My organization over the last three years has led or received trade missions from eight countries. We visited or hosted delegations from Argentina, the U.K., India, China, Romania, South Korea, Poland, and the U.S.A. We are very active in those markets supporting not only CANDU technology but supporting the companies across Canada that are able to supply not only into CANDU reactors but into other reactors worldwide.

You asked about the future of nuclear R and D and innovation. We're very enthusiastic about the new structure of Canadian Nuclear Laboratories. I think the GOCO model, as Richard stated, has worked well in other countries. We think it will bring a more commercially focused R and D program, and researchers and decision-makers will need to see a line of sight from their innovation to the realization of products that benefit the people and the industry.

● (0920)

We're also pleased that there's been strong engagement between the laboratory and members' supply-chain companies across Canada, which are the organizations that can take the innovations that emerge and are incubated at Chalk River into real important applications to support our industry.

I'm now going to touch on the medical innovation in R and D. We were the first country to develop the cobalt-60 cancer therapy machine. That was demonstrated in Saskatchewan in 1952. This is an example where need drives innovation. With the potential closing of NRU, our colleagues at Nordion and Bruce Power are working together to develop another way to produce the kind of high specific activity cobalt previously produced at NRU. It's a way that has emerged out of necessity.

Another issue you raised was how the shutdown of NRU will impact R and D in the nuclear sector. Of course, it's disappointing to see an asset of that importance no longer being maintained, but it's causing our organizations to look for international R and D collaboration with other facilities around the world, facilities that can do some of the things NRU does to ensure that we continue to support our industry with constructive and valuable R and D.

I think Canada's nuclear waste management plan has been a very robust and internationally recognized one. I'm dating myself, because I can remember when the Canadian nuclear fuel waste management program was announced in 1978. That started research of over $1 billion on looking for solutions in deep underground facilities in granite rock. AECL built the underground research laboratory in my home province of Manitoba, which was a world-leading facility, attracting scientists from around the world, who came and did research at that facility. It's now decommissioned, but I think it established Canada as a world-leading organization in the field of R and D in high-level waste.

We've talked about the Nuclear Waste Management Organization and their very strong program of community engagement. They've travelled across the country, have identified now nine communities that are still interested in hosting a high-level waste facility. These communities have the right geology to support the facility, and they continue to show interest in that. I think we're also demonstrating world leadership in how we plan to manage our high-level waste.

Finally, you asked about the opportunities and the state of decommissioning. Canada actually has much more experience in nuclear decommissioning than we give ourselves credit for. Indeed, whenever we replace reactor cores—and we've done that at Pickering, Point Lepreau, and more recently at Bruce—we're actually doing a partial dismantling. We are surgically removing the internals of a reactor core and then replacing it with new components, so we have experience in that type of surgical decommissioning, which will stand us well when we look at the worldwide decommissioning market.

Sadly, it's not something that we like to see, but there are more than 20 reactors that are slated for decommissioning in the U.K. and the U.S.A., as well as domestically here in Chalk River, Pickering, and Gentilly-2. I think our industry, especially those companies with robotic capability, are very well positioned to capitalize on that opportunity.

In summary—and I'll just echo what others have said—Canada is indeed a tier-one nuclear nation. Our history goes back a long way. Chalk River really is an iconic location for the nuclear industry, of which we should be very proud, and are very proud. As a small nation, we have typically played in a much higher weight class in the nuclear industry. We will continue to do so. We hope that this committee will, in its findings, support the conclusions we hope we have brought to you today.

Thank you.

● (0925)

The Vice-Chair (Mr. John Barlow): Thank you very much, Mr. Oberth, and we appreciate your staying right on time.

Because time is a constraint, we'll try to move along as quickly as we can.

Mr. Serré.

Mr. Marc Serré (Nickel Belt, Lib.): Thank you, Mr. Chair.

Thank you to our witnesses. I wish we had more time. We'll have to get you back here to talk to the committee, because I think we have a lot to talk about.

If we had more time, obviously the small modular reactor is very important, the safety, the nuclear waste management.... I'd like to mention that Blind River has a strong proposal. It's one of those nine sites.

However, what I wanted to talk about is a bit broader, because we really have four groups here, which is fantastic. When we talk about international competition, we're tier one and we have to compete internationally. What I want to ask the group here is.... I'm hearing a lot about silos. You're different associations and working...but Mr. Barrett mentioned earlier about a council. We have some of these parallels in the mining industry with CEMI. We have parallels in the oil sands with COSIA, and they look at more of a cluster ecosystem. I know we've heard the term “cradle to grave”, and I don't like that term, but essentially an ecosystem that incorporates R and D, innovation, operation, commercialization, and the supply and services.

Obviously, Canada is a world leader, as you all mentioned. We have the uranium here with the mining, we have the technology, we have the innovation with the staff and employees, then we have the export. We are seen as very credible. How can we expand on the 60,000 jobs we have here in Canada by looking at more of a COSIA approach, more of a council approach, so that you look at that entire spectrum of services? How can we support that?

Mr. Barrett, do you want to start, or do others want to comment?

● (0930)

Dr. John Barrett: Thank you very much. That's a very good question.

I'll just start with noting that about three or four years ago some of what you raised was appreciated by the industry, and there was a successful attempt at getting a very high level of CEO suite of our industry, which is a broad one. As you know, it goes from mining right through to the Chalk River site and the SMEs that Ron mentioned. It's a diverse group.

Nevertheless, it came together to establish what we called the nuclear leadership forum. Through deliberations, there was an identification of five different areas where the industry determined what needs to be done in order to keep that status that Ron was describing, whether you call it “tier one” or “in the top league”. That resulted in five action teams, which are still in operation. They don't fade away and they don't finish entirely.

One of them is very practical. It's on refurbishment, so it's a real focus on the importance of getting that job done. One is on innovation. I've been involved in that one, and there was an identification of the ecosystem you mentioned and trying to determine the ways forward. There's one on international. There's also one on human resources and the skilled workforce of the future for the industry. The other one is on waste management. Those are the five. That developed some very good work, because it brought the industry together from its diversity to focusing on these five key areas.

However, the one thing that's been missing is how we take this to government, federally as well as provincially, and not just Ontario. We've talked to Saskatchewan, and we're willing to talk to other provincial governments who may have an interest there.

That is why we are proposing an innovation council and a sector council. We don't have one like mining, automotive, and aerospace do. That would bring that kind of interaction, which then could really, I think, result in a strategic approach government-industry partnership, etc.

Mr. Ron Oberth: I'm going to add that I think you used the word “silos”. I don't think that's the right term. We would want to discount that.

The five of us at this table work together collaboratively. We've done trade missions together. There is a cluster. No offence to our friends from chemical, but the industry cluster is in southern Ontario.

As an example, building on what John said about the nuclear leadership, when we've gone offshore on some of our bigger, better, and more impactful missions, the trade missions have included SNC-Lavalin, which is the developer of the CANDU technology. We've had SMEs from various sectors supplying various components on the same trade mission. CNSC comes along on that trade mission to demonstrate their support for the industry. We've had operators, such as Bruce Power and OPG, on those missions. CNL and AECL have been on those trade missions. We have been blessed to have Kim Rudd on our trade mission to China and the provincial minister of innovation, Reza Moridi, was with us also in China and in South Korea.

When we go, we portray a unified, dynamic, and integrated organization. I think that's the way we are seen in the outside world. It doesn't mean we can't do better. We will continue to strive for that, but from the outside we're seen as a pretty dynamic and integrated team.

Mr. Marc Serré: Thank you.

In the minute I have left I just wanted also to ask about the reference made several times to nuclear power being an energy source to help with our greenhouse emissions in Canada and worldwide. Can you expand a bit about that? How can we help as a government?

Anybody can answer.

Dr. John Barrett: I'll take a stab at it.

I think that is a really important question. What we're finding is that there is a tendency—and part of it has to do with the public knowledge we've alluded to, the lack sometimes of detailed knowledge or familiarity with our sector and its contribution to clean energy—that there are discussions, and they happen here in Ottawa and other provincial capitals, where the discussion of clear energy is not including nuclear energy.

One of our really important, basic approaches, which we work on continually, is to make sure that the energy that's produced by nuclear power is brought into that. It is clean tech, and it is clean energy. This is perpetrated also on an international level. One of my staff is at the COP 21—

● (0935)

The Vice-Chair (Mr. John Barlow): Sorry, Mr. Barrett, you might have time to elaborate on that with your next question.

Mr. Strahl.

Mr. Mark Strahl (Chilliwack—Hope, CPC): Thank you, Mr. Chair. I'll be careful to stay within the timeline.

Mr. T.J. Harvey (Tobique—Mactaquac, Lib.): He's very rigid.

Mr. Mark Strahl: Thank you, all, for coming today to talk to us about nuclear energy. We've just started this segment of our energy examination. I think we have touched on a number of things today. One is the emissions of nuclear safety, and public perception I think is a real issue. Many industries across the country that had for decades just taken their positions for granted are now finding out that they have to explain themselves. Sometimes that's a difficult transition.

I think people like us who are examining this know that the facts are on your side. It's a safe industry. It has benefits for clean tech. An evidence-based review would show that it's a good option for Canadians, but as we've seen, we're in this position where some of the organizations and individuals who are most in favour of addressing climate change aggressively would also be most opposed to an expansion of nuclear energy. I think that's the difficult position that nuclear finds itself in, which is that it is a solution to many of the climate change issues, but it also has that stigma attached to it even though it is a safe industry.

I wanted to focus on safety here. Certainly we've heard about small modular reactors. If we want to talk about moving those into the north for natural resource development or any projects like that, Canadians need to be assured that it would be safe. I think that's one of the things I wanted to talk about with the Canadian Nuclear Safety Commission.

As was referenced, there's been a recent report by the commissioner of the environment and sustainable development where she said:

> We found that the Commission does conduct inspections, and when issues are found, they follow up to ensure compliance, and they do so 100 percent of the time.
>
> However, the Canadian Nuclear Safety Commission could not show that site inspections were planned in a rigorous and systematic way to ensure that they were sufficient—in both number and type—to verify that nuclear facilities were complying with all requirements.
>
> The Commission also could not show that it had allocated enough staff to carry out inspections, or that inspectors always followed procedures when carrying out and documenting inspections. For example, we found that three quarters of site inspections were conducted without an approved inspection guide.
>
> This led to inconsistencies, gaps in documentation, and missed opportunities to improve the way inspections are carried out.

This investigation by the commissioner was conducted as a result of a letter from a whistleblower, an anonymous letter.

The initial reaction, Dr. Binder, was for an internal investigation that said that the claims were exaggerated. They've since been verified by the commissioner. You questioned the letter's authenticity and suggested its contents were part of a conspiracy theory, according to Gloria Galloway of *The Globe and Mail* on October 12.

I want to give you the opportunity. You said you accepted the recommendations. What lessons have you learned from this experience? What specific actions are you taking to address those concerns, and what are you doing to ensure that future safety concerns are handled in a better way?

● (0940)

Dr. Michael Binder: How much time do I have, Mr. Chairman?

The Vice-Chair (Mr. John Barlow): You have two minutes.

Dr. Michael Binder: First of all, let me start by clarifying that the audit was a scheduled audit. It had nothing to do with the anonymous letter, so let's not connect the dots here. The anonymous letter came way after the scheduling of the audit. In fact, the audit was almost complete when we got the anonymous letter.

Secondly, the key words regarding the audit finding are “approved inspection guides”. You have to understand that what the commissioner found and what we've accepted is that, yes, there's room for improvement in the way we document our documents. This is what happened. The inspectors had a draft guide. The draft guide existed for a long time. Everybody was comfortable with it. It was not formally approved. To be formally approved, it would have had to have been signed by two parts of our organization's science division. It was a sloppy oversight. It was an administrative oversight. It did not have any impact on safety. The moment we found out, we gathered all of the inspection and got it formally approved. We accepted it because there was no excuse for not having it signed.

That is what I'd like to focus on. The commissioner, herself, said that there was no time that she assessed an impact on safety. I can tell you that we are proud of our ability to inspect and assess the safety. We have many years of safety records. I would compare the safety records for our system to any other country in the world in terms of accidents, emissions, etc. Don't ask me. Don't rely on me. Look at the international assessment by peer review experts. Those international experts came to Canada and assessed our system. They gave us a very good mark for safety and compliance.

The Vice-Chair (Mr. John Barlow): Thank you, Mr. Binder. You may have further opportunity to expand on that.

Mr. Cannings, you have seven minutes, please.

Mr. Richard Cannings: Thank you all, again, for being here today.

I will just perhaps let Mr. Binder continue on with that line because public confidence in our nuclear industry is, of course, of utmost importance to Canadians and to the industry. In some quarters, CNSC is perceived as, perhaps, more of a cheerleader for the industry than as a real, unbiased regulator. There were the incidents that we had over the summer, the whistleblower letter that suggested that there was a lack of due diligence on CNSC's part and the way that it was handled. At least some of the public media portrayed an internal investigation that was almost treated, in some ways, in a joking manner.

Don't you agree that the public confidence that Canadians need to have in CNSC is of utmost importance? Is there anything that you are doing in your organization to change that perception?

Dr. Michael Binder: Thank you for the question. It will give me an opportunity to clarify some things.

First of all, on safety and the public, most of the history of nuclear and people's fear of nuclear originated from the weapon side. People cannot disconnect the origin from the beneficial aspect. It's interesting when you talk to Canadians about isotopes. Isotopes are medical and they're good, but nobody cares about that.

● (0945)

Mr. Richard Cannings: I'm talking about the public perception of your organization as a regulator.

Dr. Michael Binder: I can tell you that there is a vocal minority that does not necessarily agree with the way we take decisions, but anybody who ever had any opinion about nuclear, about our facilities, or about a hearing, appears in front of us, and we have an informed discussion that feeds into our decision.

Internally, I want to get into the anonymous letter. You should know that we get all kinds of letters. Some of them are anonymous and some of them are on the record. Some of them originate internally and some of them externally. You have the licencee employees who write letters to us in confidence. We have a process in place. No matter who writes the letter, we have a responsibility to do due diligence to make sure the letter does not raise legitimate concerns.

If somebody writes me a letter saying we didn't do A, B, and C, right away we have to make sure that safety was not compromised. That's why you don't go into some external, lengthy kind of thing. We have to do an internal review very quickly to make the commissioners accept that no safety was compromised. That's why we did it, and why we did it internally.

Some of the press picked up on the fact that I gave my employees, my staff, the opportunity to say whether they actually knew where it came from. If people looked at it as a joke, it was nothing like a joke. It was actually a hearing in the public, by the way, for our staff to explain whether there was any safety issue in this particular letter.

Mr. Richard Cannings: Okay—

Mr. Michael Binder: Just to finish, we have been focusing on this scientific-based organization. We encourage debate and arguments, because science is not exactly black and white. At the end of the day we would like a consensus among our employees, and I will stand by the integrity and the ability of our employees to raise issues at any time.

Mr. Richard Cannings: Okay.

Just following up on public confidence and public concerns around the nuclear industry, the occasional critical event happens elsewhere in the world. I just wondered, has CNSC ever publicly released an assessment of the off-site consequences of a Fukushima-scale radioactive release at a Canadian nuclear plant, yes or no?

Dr. Michael Binder: Absolutely.

We have a study. It's on our website. You can pick it up. It was a study that mimicked the severity of Fukushima and then assessed where the impact would be and how the emergency planning would deal with this.

Mr. Richard Cannings: Can you provide documentation for that?

Dr. Michael Binder: Absolutely. It will be a pleasure.

Mr. Richard Cannings: I'd like to move to Mr. Sexton.

You mentioned some of the waste disposal situations and the deep geological repositories. I think there is something—I don't know if it was in your deck or what—that talked about an $8-billion cost. I was talking with NRCan at our last meeting, and they said the cost was $16 billion for those deep geological repositories. Can you comment on that?

Mr. Richard Sexton: I think we may be talking about two different liabilities. The liability that AECL in Canada retains is principally for the Chalk River and the Whiteshell sites. Those sites have several hundred buildings, of which, during the 60 years, some were internally contaminated. One of the missions that we will see in the next 10 years is to remove and take down 120 buildings.

What Canada and Chalk River are doing at Chalk River is building a highly designed facility to move that material into for long-term disposal for that type of material. That material would not be required to be placed into a deep geological depository. It will be what we call a near-surface disposal facility, which we're engaging in with CNSC—actually, the licencee is engaging with CNSC.

● (0950)

The Vice-Chair (Mr. John Barlow): Sorry, your time is up, Mr. Cannings. Thank you.

Now we'll go over to Mr. Harvey for five minutes.

Mr. T.J. Harvey: First of all, I'd like to thank you all for coming today and I apologize for the fact that we're going to have to end early, but I think we're going to get through the majority of it.

The Vice-Chair (Mr. John Barlow): You have seven minutes.

Mr. T.J. Harvey: First of all, I'd like to thank you, Mr. Binder, for elaborating on the comments around safety. It does highlight not only the importance of nuclear safety, but also what a robust regulatory process we have in Canada on nuclear safety, and how we can trust, as Canadians, that you are working in our best interests in that we have developed a regulatory regime that supports the growth of a robust nuclear sector. I want to thank you for that.

Following up on Mr. Strahl's comments earlier, it is important that we all, both in government and in industry.... I'm going to use an analogy that refers back to agriculture. I grew up in agriculture and I've done a lot of advocating on behalf of agriculture, and when I'm meeting with agricultural sector groups I'm always telling them that we spent the last 100 years building the industry and if we want to be successful in the next 100 years, we're going to spend the next 100 years telling the story.

I think that's a large piece that's missing from the nuclear sector. You don't do a good enough job of tooting your own horn and making the public aware of how far nuclear technology has come and how good a leadership role Canada's nuclear sector plays, not only within Canada but on the global stage. It is important that we as government do whatever we can to support you in that, but also that you, within the nuclear sector, toot your own horn.

Get out there and talk about how nuclear can play an important role in baseload technology to support alternative sources of energy. That is an integral part of it, as is how small-scale nuclear can play an integral part for energy development in the north, and how nuclear can play an important part in this idea of an east-west energy grid, which could potentially be long term. That is something that not only government needs to focus on but the sectors need to focus on. There is a distinct opportunity for nuclear to do that.

Following up on Mr. Serré's comments earlier, I think he did a good job of hitting the points on a whole-of-sector approach to exportation of the innovation, but not only the innovation but the supply chain and the technology itself, the implementation and the supply chain as a whole-of-sector approach to exportation of that nuclear technology on a global scale, whether it's in Romania, Argentina, or wherever.

We have the capabilities to do it, but we have the capabilities as a country to not only export the technology and the know-how but also the physical parts to do those projects and put Canadians to work on those projects around the world. I wanted to highlight that.

I really want to touch on the fact that I think nuclear plays a very integral role in helping us reach our climate change initiatives, and that's something else the sector needs to do a good job of, getting out there and saying how important it is. Mr. Strahl was absolutely correct when he said that the small splinter groups that are opposed to nuclear are opposed to everything, and they're very vocal and they do an amazing job of getting their story out there. So I commend you for everything you do, but I think we need to do a better job of getting the message out to Canadians that nuclear has come a long way and it does play an integral role in our energy future in Canada.

With that, I'm going to open it up to comments and whoever wants to go first.

Mr. Ron Oberth: I think this is an area where government and industry should work together. I commend John's organization. The CNA, I think, does a wonderful job of telling the story. The difficulty is finding people to listen and to write about it.

For example, when the Minister of the Environment talks about climate change and does not include nuclear in her speech, which is read by a lot of people, it's seen to be a bypassing of our industry. Our challenge, of course, is to then get not only the public and the reporters to write what we say, but to get some of our political leaders to embrace our message and talk about it.

I was at an event in Ontario last evening, and the Ontario minister of energy talked about how proud he was of our clean energy system in Ontario, and he attributed that to wind, solar, hydroelectric, and biomass, stop, period. I'm not sure if there were reporters there, but that sort of thing happens. We heard Premier Wynne do the same thing when she was at Globe. John and I were there. She talked about how proud she was of her grid in Ontario, and did not mention the nuclear word. Our challenge is to get the political leaders whose voices are heard and respected to begin to include nuclear in the dialogue. It's a struggle and we'll keep at it.

● (0955)

Mr. T.J. Harvey: I totally appreciate your comments on that. I think that, as you've seen so far, Kim is very supportive of your industry, and I can assure you that on behalf of the one nuclear power plant that we have in New Brunswick, we're very proud of that nuclear power plant. I know that our minister of energy in New Brunswick is constantly flogging that within our province, and how supportive he is of that.

I agree it is something that needs political leaders to support, because it has had such a negative connotation in the past. This isn't reflective of the Canadian industry at all; it's reflective of circumstances that have been created by other jurisdictions around the globe in the past. But I think it's our responsibility, both within government and within industry, to help to change those myths surrounding nuclear and see it as the forefront of a natural strategy for energy going forward, because it will be an integral part of our energy strategy in the future.

The Vice-Chair (Mr. John Barlow): Look at you, right on seven minutes.

Mr. T.J. Harvey: I knew you were going to cut me off.

The Vice-Chair (Mr. John Barlow): Yes, I was waiting. I was so excited.

I think we'll have time for a second round, if we can keep everybody on time.

We'll now go to Ms. Stubbs, for five minutes, please.

Mrs. Shannon Stubbs (Lakeland, CPC): Thanks, Mr. Chair.

Thanks to all of you for being here.

Let me just start my comments by saying that as a member of Parliament from northern Alberta who represents a riding where the livelihood of the people in the community depends on Alberta's world-leading responsible oil and gas, heavy oil, and oil sands development, I am keenly attentive and very sensitive to the comments that have been made here today about the impact of maybe less-than-fact-based, small, well-organized groups, and the damage they can do to the public confidence in an industry on a number of fronts, relating to everything to do with regulation standards, exploration, production, and transportation of certain projects.

I look forward to my government colleagues, who have spoken so passionately here today and consistently on other opportunities about nuclear, joining me over the next couple of years in the same sort of fact-based advocacy campaign for Alberta and Canada's world-leading responsible oil and gas, heavy oil, and oil sands development, just as we will all join together in the advocacy for the nuclear industry and the important role it will play in the broad spectrum of Canada's responsible energy development well into the future.

I would just like to focus on a couple of comments you made, Mr. Binder, and some quotes in your opening remarks. I also want to recognize the value and highlight the importance of your comments about the regulatory process and measures most importantly being flexible so that they don't act as a roadblock to innovation and investment in development, your comments on the importance of predictability and timelines, and also your point about regulations being clear and flexible enough to address current and future requirements. I think those are probably best practices in an approach to regulatory framework that should be advocated and should apply to all the sources of energy development, exploration, production, and transportation right across Canada.

I just want to start by inviting any or all of you to comment specifically on any particular fiscal measures or other public policy measures governments could take that would help facilitate continued innovation and investment in your sector. On the other hand, which I think might be just as important, would you like to highlight any red flags, roadblocks, or measures you think would be unhelpful and that could stifle or hamper innovation or investment?

Do any of you have any other comments or specific items in addition to your recommendation of a nuclear innovation council that you would like the committee and Canadians to know about? What sets Canada apart in terms of our global position and achievements in your sector?

● (1000)

Dr. John Barrett: Mr. Chairman, may I start on that and then hand it off to others around the table?

In the remarks I made, I mentioned a number of funds that have been created by the federal government, and it was alluded to earlier by Ron Oberth that we're not always first and foremost in the mind when it comes to areas of innovation. Mission innovation is a very important doubling by the federal government of clean tech, clean energy funding.

In Canada, we as an industry are now accepted as part of that clean energy, clean tech, array of technologies, but we want to access that. That's why, as I mentioned, we're preparing a technology road map to set out for the government and others a better understanding of the decision points and the type of role that the government will play in partnership with industry in co-funding or working out different types of arrangements that allow the innovations to go forward.

I'll just stop at this, but the point is that we are an industry where.... If you look internationally, you will see that there is no other country that is an active vendor of technology for international markets that does not have a very significant role for the government to play. Our efforts now are to help articulate and identify what that role would be, in a way that does not, of course, expect the government to do everything for us. We want to meet partway, halfway, or wherever possible, to bring these ideas and say, “Here is the policy framework. Here is the access to the investment funds that you've already set. Can you include us? This is what we think we can deliver.”

The Vice-Chair (Mr. John Barlow): Thanks, Mr. Barrett.

Mr. Tan.

Mr. Geng Tan (Don Valley North, Lib.): I heard a few comments or questions from that side of the committee asking about a report to the CNSC.

Mr. Binder, you just gave a very good answer, very reasonable. However, as a person who has been working in the nuclear industry for more than 10 years, I know that my mentality and that of my colleagues is that we cannot afford any mistakes. For us, for the people working in the nuclear industry, I have to say that science is black and white, right or wrong, because any decision we make could cost big consequences in the future. That's a big potential. I just wanted to mention this mentality of ours.

I have a question for AECL. AECL has been there for more than 60 years. It has enjoyed a long history as a highly regarded organization, in particular with respect to our CANDU reactor design technology at the Chalk River lab. When I joined the Chalk River lab 10 years ago, I was very proud to be part of an organization with such a glorious history. Now, though, it seems that this is all history.

AECL has three divisions. The first division, CANDU engineering, I mean, Sheridan Park, has been sold. The second part, R and D technology division, is now under the so-called GOCO model, so AECL would just oversee that. It's not hands-on management. The third part of AECL, the liability management, I'm sure will eventually be taken care of by other organizations such as the Nuclear Waste Management Organization, or other facilities such as a deep geological repository for long-term storage of nuclear waste.

What is the motivation for this transition of AECL's role in Canada? How can we maintain our R and D capability when AECL's importance has been so greatly diminished? What is the benefit to Canadians? There are a whole bunch of questions. To any people, any observer from our side, it will appear as though AECL will not have hands-on management but will become a shell of its former self. Why?

● (1005)

Mr. Richard Sexton: I'll start and then Shannon might add some things.

First of all, the proud history of the facility is still there. The employees are proud to work there. They are engaged in the same type of scientific study you were probably involved in. What the GOCO model brings is a degree of efficiency, a degree of commercial rigour, that will actually ensure the long-term history of the lab. This model has been used in other countries, and it has proven to be successful in revitalizing. Those who have visited the lab will see that it is in need of revitalization. I want to assure you that the pride, the innovation, which the lab has a long history of, will continue, and I believe it will be accelerated as we move forward.

Shannon, do you have any...?

Ms. Shannon Quinn (Vice-President, Science, Technology and Commercial Oversight, Atomic Energy of Canada Limited): I would like to comment on that because I think there are perhaps some misconceptions out there around science and technology in nuclear in Canada because of the restructuring of AECL.

I assure you that from my perspective within AECL there has never been a better opportunity than right now for nuclear science and technology to continue to flourish and play the same very significant role as it ever has, both from an innovation perspective and from a jobs and economy perspective.

We've heard much around this table today about the role of AECL, and frankly many other research organizations across this country in academia and industry, in creating the foundations for what is today a domestic nuclear industry that contributes about $6 billion to the economy and has a significant export opportunity. The reason this happened was that back in the very early days the Government of Canada made a very strong commitment to pursuing all the benefits of the peaceful uses of nuclear energy.

At this point we see we're at a turning point in the nuclear industry. There is renewed interest in nuclear, particularly as a clean technology, but also in new energy technologies that can serve other socio-economic needs, including energy for remote communities, energy for indigenous communities, energy to support other natural resource industries, including very large industries in this country, across this country, in Alberta, in northern Ontario, and elsewhere. We have a particular interest in Canada but that interest is shared by many other countries around the world. There's a growing attention on this.

In Canada, recently—

The Vice-Chair (Mr. John Barlow): Sorry, Ms. Quinn, we have bells. I'm asking you to wrap it up really quickly, and then we'll have to end it there.

Ms. Shannon Quinn: Right now we're seeing a reinvestment of $800 million in the facilities at Chalk River to continue that legacy. We also see far more opportunity right now to seize opportunities in SMRs and other areas of science. I think we should continue on the path on which we have already embarked.

The Vice-Chair (Mr. John Barlow): Thank you very much.

I want to thank our witnesses for being here today, for your time and some great information.

As you can hear we have bells and have to go. We will end it there.

We'll see everybody on Tuesday. Have a great weekend at home.

The meeting is adjourned.